U. S. DEPARTMENT OF COMMERCE
Sinclair Weeks, Secretary

CIVIL AERONAUTICS ADMINISTRATION
F. B. Lee, Administrator

# General Operation Rules

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Civil Aeronautics Manual 43

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# Introductory Note

Civil Aeronautics Manual 43 contains the rules, policies, and interpretations issued by the Administrator of Civil Aeronautics in application to the various sections of Civil Air Regulations Part 43, General Operation Rules.

CAA *rules* are supplementary regulations issued pursuant to authority expressly conferred on the Administrator in the Civil Air Regulations. Rules are mandatory and must be complied with.

CAA *policies* provide detailed technical information on recommended methods of complying with the Civil Air Regulations. Such policies are for the guidance of the public and are not mandatory in nature.

CAA *interpretations* define or explain words and phrases of the Civil Air Regulations. Such interpretations are for the guidance of the public and will be followed by the Administrator in determining compliance with the regulations.

Rules, policies, and interpretations are published in the Federal Register and Code of Federal Regulations.

The table of contents is arranged to show the title and number of each section of the regulations. Any rules, policies, or interpretations follow the pertinent section of the regulations and are identified by consecutive dash numbers appended to the regulation section number. The text contains only the rules, policies, and interpretations which have been issued.

Current CAA Supplements 1, 4, and 6 through 9 to Civil Aeronautics Manual 43 have been incorporated with no change to the text. A new section 43.30–1 has been added to establish a broad performance standard for VOR airborne equipment used in general aviation.

# General Operation Rules

## Aircraft Requirements

43.10–1 *Operations limitations (CAA rules which apply to sec. 43.10 (b)).* Aircraft operating limitations prescribed by the Administrator shall consist of one of the following:

(a) A current CAA approved "Airplane Flight Manual" for airplanes, or a current "Rotorcraft Flight Manual" for helicopters, issued by the manufacturer, or

(b) Forms ACA–309 or ACA–309a issued by CAA to the aircraft as part of the airworthiness certificate prior to the effective date of this rule,[1] or

(c) Placards or listings or combination of both, containing the following operating limitations,[2] insofar as they have been prescribed by the Administrator for a particular aircraft:

Engine limits (takeoff, altitude, r. p. m., manifold pressure).
Airspeed limits (level flight or climb, glide or dive, flaps extended).
Maximum weights (takeoff, landing).
Empty weight and useful load.
Datum.
Center of gravity range.
Empty center of gravity.
Any special limitations prescribed by a CAA representative at the time the aircraft is presented for certification.

The placards or listings shall be accessible to the pilot, legible and not easily erased or disfigured.

(17 F. R. 7419, Aug. 15, 1952, effective Aug. 20, 1952.)

[1] The Administrator will accept Forms ACA–309 or ACA–309a issued as satisfying the requirements of section 43.10 (a) and section 43.10–1 (b) until such time as the aircraft is altered or modified to such an extent as to render inapplicable any one of the prescribed limitations, in which event the owner will be required to comply with section 43.10–1 (c).

[2] It is the responsibility of the aircraft owner to prepare and place in the aircraft current operating limitations. The technical data necessary to develop these limitations may be obtained from the pertinent aircraft specifications issued by the Administrator. These specifications are furnished upon request, free of charge, by all CAA regional offices. These specifications are also available for review only at all Aviation Safety District Offices.

Where the Administrator has never published an aircraft specification or limitation for a particular aircraft, the Administrator will prescribe the appropriate limitations at the time the aircraft is presented for certification or at any time the owner requests such information.

## Maintenance

43.22–1 *Annual inspections (CAA rules which apply to sec. 43.22 (a)).*

The purpose of this section is to prescribe the scope of the annual inspection required by section 43.22 (a) and to set forth the procedure to be followed by an aircraft owner when making application for an annual inspection.

(a) *Inspection requirement prior to presenting application.* Immediately prior to submitting an application for annual inspection, the aircraft shall be inspected and found airworthy by a certificated aircraft and engine mechanic(s) or by an appropriately rated and certificated repair station. The mechanic(s) or the appropriately rated certificated repair station shall conduct and record the airworthiness inspection in accordance with section 43.22–2 (a) and (b). All items found unairworthy, as a result of the inspection, shall be corrected prior to presenting the aircraft for annual inspection.

(b) *Application procedure.*

(1) After the aircraft has been found airworthy in accordance with paragraph (a) of this section, the aircraft owner (or his agent) shall make application for annual inspection by completing form ACA–305 entitled, "Application for Airworthiness Certificate and/or Annual Inspection of Aircraft," [3] and present it and the aircraft to a CAA representative for consideration. The aircraft shall be presented in condition for inspection, i. e., all inspection plates, access doors, fairing and cowling shall be open or removed and the aircraft and engine thoroughly cleaned to properly reflect the actual

[3] The reporting requirements of this form have been approved by the Bureau of the Budget in accordance with the Federal Reports Acts of 1942.

condition of all the parts and components being inspected.

(2) The following official documents shall be available in the aircraft at the time it is presented for inspection:

(i) Current registration certificate as required by section 43.10 (a).

(ii) If the aircraft is flown to the point where the annual inspection is to be conducted, the aircraft shall display a current Certificate of Airworthiness, form ACA–1362, issued in accordance with section 1.67 of this subchapter, or carry a special flight authorization form ACA–1779 entitled, "Application and Authorization for Ferry Permit," issued in accordance with section 43.10 (a).

(iii) The aircraft and engine records required by section 43.23.

(iv) A visual reference form of operations limitations, as required by section 43.10–1.

(v) The inspection report, required by paragraph (a) of this section.

(c) *Renewal of airworthiness certificate.* Section 1.64 (a) (3) of this subchapter provides for renewing an airworthiness certificate upon satisfactory completion of the annual inspection described in paragraphs (a) and (b) of this section. The CAA will issue a new Certificate of Airworthiness, form ACA–1362, each time the aircraft passes the annual inspection requirements. The CAA representative conducting the annual inspection will, upon completion of the inspection, issue the new Certificate of Airworthiness to expire one year from the date the annual inspection was completed. This procedure will be applied without reference to whether the former Certificate of Airworthiness has expired or is still current.

(d) *Application and inspection forms.* The inspection and application forms mentioned in paragraphs (b) and (c) of this section are available at all CAA regional and Aviation Safety district offices, all Designated Aircraft Maintenance Inspectors, and those Certificated Repair Stations holding a class type airframe rating.

(17 F. R. 7675, Aug. 21, 1952, effective Aug. 25, 1952.)

43.22–2 *Periodic inspection (CAA rules which apply to sec. 43.22 (b)).* The purpose of this section is to prescribe the scope of the periodic inspection required by section 43.22 (b) and to identify the form and method of recording the findings of this inspection.

(a) *Scope of periodic aircraft inspection.* The inspection required by section 43.22–1 (a) shall be conducted as follows:

(1) Prior to inspection, all inspection plates, access doors, fairing and cowling shall be opened or removed and the aircraft and engine thoroughly cleaned to properly reflect the actual condition of the parts being inspected. Airworthiness of the aircraft shall be determined by thoroughly inspecting the pertinent items in subdivisions (i) through (ix) of this subparagraph in accordance with instructions contained in the aforementioned subdivisions, manufacturer's inspection procedures, supplemental service information, and standard inspection practices. Each item shall conform with CAA Aircraft Specifications and Airworthiness Directives before being checked as airworthy.

(i) *Fuselage and hull group.* Carefully inspect the fuselage and/or hull for general condition; fabric or skin for deterioration, distortion, pulled rivets, fabric attachment, other evidence of failure, and security of attachment of fittings. The various systems and components installed in this group should be checked to assure that they are properly installed with no apparent defects and are operating satisfactorily. When applicable, the same general inspection procedures will apply to lighter-than-air craft and a determination made of the condition of the envelope, gas bags, ballast tanks, etc. Rotary-wing-type aircraft or other craft utilizing rotor or other propellant drive shafts should have the shafts inspected in accordance with the manufacturer's maintenance manual. Lubricate items as required.

(ii) *Cabin and cockpit group.* Check the cabin and cockpit for cleanliness and loose equipment which might foul the controls; seats and safety belts for condition and apparent defects; windows and windshields for deterioration, or breakage; instruments for proper operation, mounting, and marking; flight and engine controls for installation and operation; batteries for installation and proper charge; the various systems for installation, general condition, apparent and obvious defects and security of

attachment. The above inspection procedure will also apply to the control car of lighter-than-air craft. Lubricate items as required.

(iii) *Engine and nacelle group.* Remove all engine cowling and make a visual inspection of the entire engine section for evidence of excessive oil, fuel, or hydraulic leaks. Trace any and all leaks to their origin so that they may be corrected. Check all studs and nuts for tightness or obvious defects. Inspect the engine mount for cracks, tightness of mounting, and security of engine attachment to mount. Insure that flexible vibration dampeners are in good condition. Examine the engine controls for defects, proper travel, and safetying; lines for leaks and hoses and clamps for condition and tightness. Check exhaust stacks for cracks or other defects and satisfactory attachment. Examine accessories for apparent defects and security of mounting. Inspect the various systems for proper installation, general condition, defects, and attachment. Inspect cowling for cracks or other defects. On rotary-wing-type aircraft inspect the main rotor transmission gear box for obvious defects as outlined in the manufacturer's maintenance manual. Properly lubricate items so requiring.

(iv) *Landing gear group.* Examine the landing gear for general condition and security of attachment of all units. Make certain the oleo fluid level is at proper height or other shock-absorbing devices are in good condition. Inspect all linkage, trusses, and members for evidence of undue or excessive wear, fatigue, distortion, and security of attachment. Assure that the retracting and locking mechanisms, when installed, are operating satisfactorily. Check hydraulic lines for leakage and electrical system for chafing and proper operation of switches. Remove the wheels and examine for cracks or other defects, tires for wear or cuts, brakes for proper adjustment. Lubricate entire landing gear assembly. If floats or skis are installed, inspect for security of attachment, general condition, and any obvious or apparent defects.

(v) *Wing and center-section group.* Determine the airworthiness of the wing and center-section group by thoroughly inspecting the complete assemblies for general condition, fabric or skin for deterioration, distortion, pulled rivets, fabric attachment, other evidences of failure, and for security of attachment. This inspection is to include the various systems installed which make up a complete wing assembly. Rotary-wing-type aircraft are to be inspected in accordance with the manufacturer's maintenance manual. Lubricate items as required.

(vi) *Empennage group.* Inspect the complete empennage assembly for general condition; fabric or skin for deterioration, distortion, fabric or skin attachment, other evidences of failure, and for security of attachment. Components and systems which make up the complete assembly should receive the same attention and it should be determined that they are installed properly and operating satisfactorily. Lighter-than-air craft should be inspected in the same manner. Helicopters should have the tail rotors inspected in accordance with the manufacturer's maintenance manual. Lubricate items as required.

(vii) *Propeller group.* Carefully examine all parts of the propeller for cracks, nicks, bends, or oil leakage, if hydraulically controlled. Assure that all bolts are tight and properly safetied. Check the propeller anti-icing devices for proper operation or obvious defects. Assure that control mechanism operates satisfactorily, is securely mounted, and controls operate through full range of travel. Lubricate as required.

(viii) *Radio group.* Inspect radio and electronic equipment for installation and security of mounting. Assure that wiring and conduits are properly routed to prevent short-circuiting and that there are no obvious defects. Determine that bonding and shielding is properly installed and in good condition. If installed, inspect trailing antenna mechanism for security and proper functioning.

(ix) *Miscellaneous group.* When installed, inspect the miscellaneous items of equipment to determine that the component or assembly is installed in accordance with accepted standard practices, and that the items are operating satisfactorily.

(b) *Periodic inspection report form.*

(1) The results of inspection called for in section 43.22–1(a) shall be recorded on any of the following forms, and a signed copy given to

the aircraft owner upon completion of the inspection:

(i) The Periodic Aircraft Inspection Report, Form ACA–319,[4] furnished by the CAA, or

(ii) An aircraft manufacturer's form, which reflects in detail the condition of the items of inspection set forth in paragraph (a) of this section, as appropriate to the particular model aircraft;

(iii) Any other form similar to the example given in figure 1.

(2) On all forms, excepting the form ACA–319, the following statement must be imprinted:

"This form is authorized by the CAA. The inspection recorded herein was conducted in accordance with the Civil Air Regulations."

(3) In addition, the forms must contain instructions for their use.

(c) *Entries in aircraft and engine records.* The aircraft owner shall make available to the mechanic(s) the aircraft and engine records in order that the mechanic(s) may record the inspection as required by this part and Part 18 of this subchapter. After conducting the inspection of an aircraft and upon finding it airworthy, the mechanic(s) will enter in the logbook over his name, certificate number and rating(s), the following statement:

"It is certified that this aircraft has been thoroughly inspected, as required by Civil Air Regulations, and found to be airworthy."

(d) *Annual inspection acceptable in lieu of periodic inspection.* When an aircraft has satisfactorily passed the annual inspection required by section 43.22 (a), it is also considered to have passed the periodic inspection required by section 43.22 (b). In such cases, accumulation of flight time toward the next periodic inspection will start immediately after the inspection specified in section 43.22–1 (a).

(17 F. R. 7676 Aug. 21, 1952, effective Aug. 25, 1952.)

43.23–1 *Maintenance of engine logs (CAA interpretations which apply to sec. 43.23).* A record of the previous operating time and history of all engines overhauled, repaired, or reassembled to standards other than those for rebuilt engines, as defined in section 43.23–1, must be retained in the engine logbooks.

(15 F. R. 768, Feb. 11, 1950, effective upon publication.)

43.24–1 *Rebuilt engine (CAA interpretations which apply to sec. 43.24).* A rebuilt engine is defined as a used engine which has been completely disassembled, inspected, repaired as necessary, reassembled, tested, and approved in the same manner and to the same tolerances and limits as a new engine. Component parts of such engines may be either used parts or new parts. The used parts may be either the parts from the same engine or from other service engines, but they must conform to production drawing tolerances and limits to which new parts must conform. In addition, all parts, either new or used, meeting approved oversize and undersize dimensions acceptable for new engines are also eligible.

(15 F. R. 768, Feb. 11, 1950, effective upon publication.)

43.24–2 *Approval of rebuilt aircraft engines (CAA rules which apply to sec. 43.24).*

(a) *Logbook entries.* Other information which must be entered in the logbook of a rebuilt engine consists of a notation when (1) any mandatory changes required by Airworthiness Directives have been incorporated, and (2) any changes have been incorporated as a result of compliance with manufacturers' service bulletins, where such recording is requested specifically in the bulletin.

(b) *Compliance date.* All manufacturers who grant zero time to rebuild engines, and all agencies approved by the manufacturer to do such work must apply paragraph (a) as soon as possible, but not later than November 1, 1949.

(15 F. R. 768, Feb. 11, 1950, effective upon publication.)

## Aircraft Instruments and Equipment

43.30–1 *Instrument flight rules (CAA interpretations which apply to sec. 43.30 (c) (2)).* Two-way radio communications systems and navigational equipment, which will normally provide continuous coverage from any point along the routes flown, will be considered to be appropriate to the ground facilities to be used. Where either an LF/MF or VOR system will not provide continuous route coverage, a com-

[4] The reporting requirements of this form have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

bination of LF/MF and VOR systems which will provide two-way radio communications and reception of navigational signals from any point along the routes to be flown will also be considered as complying with section 43.30 (c) (2).

(19 F. R. 5305, Aug. 20, 1954, effective Sept. 15, 1954.)

## Piloting Rules (General)

43.41–1 *Medical certificate and renewal (CAA interpretations which apply to sec. 43.41).* A medical certificate becomes valid on the date the physical examination is conducted, and continues in effect for the remainder of that month plus the number of calendar months specified in section 43.41. A calendar month includes that period of time extending from the first day of any month as delineated by the calendar through the last day thereof.

As an example, if an airline transport pilot is issued a first class medical certificate on any day during January, he must renew such certificate within six calendar months, i. e., before July 31, in order to exercise the privileges of an airline transport pilot rating after that date.

(18 F. R. 3533, June 19, 1953, effective June 30, 1954.)

43.46–1 *Authorization (CAA policies which apply to sec. 43.46).* Authority for towing objects by aircraft is issued by the Administrator in the form of a Certificate of Waiver or Authorization, form ACA–663. This certificate is issued to the operator of the aircraft by the local Aviation Safety district office.

(18 F. R. 6871, Oct. 31, 1953, effective Nov. 25, 1953.)

43.46–2 *Application (CAA policies which apply to sec. 43.46).* An application will be made by the operator of the aircraft in the following manner:

(a) *Application form.* Obtain three copies of form ACA–400, Application for Certificate of Waiver, from the local Aviation Safety district office, and fill out all copies as follows:

(1) Type, or print, in ink.

(2) Give complete information on items 1 through 7.

(3) Sign all copies of the application on the reverse in the space provided for the applicant's signature.

(b) *Application procedure.*

(1) Submit all copies of the application to the local Aviation Safety district office, and

(2) Arrange with the local agent for inspection of the aircraft and equipment to be used, and the aircraft records.

(c) *Inspection.* Inspection of aircraft and equipment will include:

(1) Hitches, release mechanisms, and type of rope or cable used.

(2) Loading conditions of the aircraft.

(3) Area and procedure for dropping the tow or cable.

(4) Proper lighting for aircraft and tow when night operations are involved.

(5) General airworthy condition of the aircraft and tow.

(18 F. R. 6871, Oct. 31, 1953, effective Nov. 25, 1953.)

43.46–3 *Certificate conditions (CAA policies which apply to sec. 43.46).* A Certificate of Waiver or Authorization for towing objects by aircraft will be issued subject to the following conditions and limitations.

(a) *Operations authorized.* Operations will be limited to those specified on the certificate. No authorization will be issued unless the operation:

(1) Will not create a hazard to other air traffic, or persons or property on the ground.

(2) In a control zone, can be controlled by air traffic control, or other air traffic can be advised of the operation.

(3) On airways, or in the vicinity of busy airports, can be made known to affected air traffic.

(4) Can be conducted in accordance with such special provisions which the approving agent deems necessary.

(b) *Duration.* The certificate will contain an expiration date which will allow ample time to complete the operation, but may be surrendered by the holder or cancelled by the Administrator at any time.

(c) *Special provisions.* The certificate will contain such special provisions as the approving agent may deem necessary in the interest of safety. *Examples illustrating such provisions are:*

(1) A thorough inspection of the aircraft, engine, and special equipment shall be made prior to each day's operations.

(2) A planned course of action shall be

followed with emphasis on selection of available emergency landing areas.

(3) A capable and experienced pilot holding at least a commercial rating will be used.

(4) Air traffic control and appropriate officials of the community shall be notified prior to beginning operations.

(5) Any other specific precaution the agent may assign.

(18 F. R. 6872, Oct. 31, 1953, effective Nov. 25, 1953.)

43.48–1 *Acrobatic flight (CAA interpretations which apply to sec. 43.48).* Acrobatic flight, insofar as it concerns the wearing of parachutes, must be deemed to exist when any maneuver intentionally performed results in the following:

(a) A bank in excess of 60° relative to the horizon, or

(b) A nose up or nose down attitude in excess of 30° relative to the horizon.

An example of the application of this interpretation is that parachutes are not required when stalls, lazy eights, etc., are performed within these limits, while these same maneuvers performed with attitudes in excess of the limits would require the wearing of parachutes. Stalls as practiced for the private pilot flight test normally would not exceed the prescribed limits.

Consideration must be given to the fact that these limits are not intended to insure that all maneuvers which could be performed within them are also within the safe operating limits of the aircraft. It is reasonably certain that a prolonged full power descent in a nose down attitude of less than 30° would exceed placarded speeds, and that sudden full application of elevators at cruising speed could produce stresses sufficient to cause structural failure.

This interpretation is intended only to define the circumstances under which parachutes must be worn in accordance with section 43.48, and does not in any way modify the definition of acrobatic flight as it applies to other sections of the Civil Air Regulations.

(15 F. R. 5843, Aug. 30, 1950, effective upon publication.)

## PERIODIC AIRCRAFT INSPECTION REPORT

*(SEE REVERSE SIDE OF THIS FORM FOR INSTRUCTIONS)*

| 1. AIRCRAFT | MAKE | MODEL | SERIAL NO. | NATIONALITY AND REGISTRATION MARK |
|---|---|---|---|---|
| | | | | |

2. INSPECTION (INDICATE WHETHER AIRWORTHY OR NOT BY CHECKING (✓) APPROPRIATE BLOCK)

| 3. Fuselage—Hull Group | Yes | No |
|---|---|---|
| a. Fuselage structure | | |
| b. Fabric—skin | | |
| c. External bracing | | |
| d. Control mechanism | | |
| e. Electrical system | | |
| f. Hydraulic system | | |
| g. Fuel system—tanks | | |
| h. Emergency exits | | |
| i. Cargo compartments | | |
| j. Rotor drive shafts | | |
| k. Hull | | |
| l. Envelope | | |
| m. Gas bag | | |
| n. Ballast tanks | | |

| 4. Cabin—Cockpit Group | Yes | No |
|---|---|---|
| a. Fuel system—tanks | | |
| b. Oil system | | |
| c. Electrical system | | |
| d. Batteries | | |
| e. Hydraulic system | | |
| f. Instruments | | |
| g. Flight—engine controls | | |
| h. Seats—berths | | |
| i. Safety belts | | |
| j. Fire-warning system | | |
| k. Fire-extinguisher system | | |
| l. Heating—ventilating | | |
| m. Windows—windshields | | |
| n. Control car | | |

| 5. Engine—Nacelle Group | Yes | No |
|---|---|---|
| a. Fuel system | | |
| b. Oil system—tanks | | |
| c. Ignition—electrical system | | |
| d. Exhaust stacks or manifolds | | |
| e. Cooling system | | |
| f. Engine controls | | |
| g. Power plant—general | | |
| h. Superchargers | | |
| i. Heating—ventilating system | | |
| j. Engine mount—attach fittings | | |
| k. Engine accessories | | |
| l. Engine cowling | | |
| m. Main rotor transmission gear box | | |

| 6. Landing Gear Group | Yes | No |
|---|---|---|
| a. Main landing gear | | |
| b. Tail—nose gear | | |
| c. Latches | | |
| d. Retracting mechanism | | |
| e. Landing gear attach fittings | | |
| f. Electrical system | | |
| g. Hydraulic system | | |
| h. Wheels—brakes | | |
| i. Floats | | |
| j. Struts—attach fittings | | |
| k. Skis—fittings | | |

| 7. Wing—Centersection Group | Yes | No |
|---|---|---|
| a. Fixed surfaces | | |
| b. Movable surfaces | | |
| c. Fabric—skin | | |
| d. External bracing | | |
| e. Wing attach fittings | | |
| f. Flight-control mechanism | | |
| g. Fuel system—tanks | | |
| h. Electrical system | | |
| i. Hydraulic system | | |
| j. Anti-icing devices | | |
| k. Gust lock mechanism | | |
| l. Main rotor blades | | |

| 8. Empennage Group | Yes | No |
|---|---|---|
| a. Fixed surfaces | | |
| b. Movable surfaces | | |
| c. Fabric—skin | | |
| d. External bracing | | |
| e. Attach fittings | | |
| f. Flight-control mechanism | | |
| g. Electrical system | | |
| h. Hydraulic system | | |
| i. Anti-icing devices | | |
| j. Gust lock mechanism | | |
| k. Tail rotor blades | | |

| 9. Propeller Group | Yes | No |
|---|---|---|
| a. Propeller blades | | |
| b. Propeller hub(s) | | |
| c. Control mechanism | | |
| d. Attachment | | |
| e. Accessories | | |
| f. Anti-icing devices | | |

| 10. Radio Group (Installation) | Yes | No |
|---|---|---|
| a. Receiver | | |
| b. Transmitter | | |
| c. Antennas—insulators | | |
| d. Bonding—shielding | | |
| e. ADF receiver—loops | | |
| f. Dynamotor | | |
| g. Auxiliary power unit | | |
| h. Electronic devices | | |

| 11. Miscellaneous Group | Yes | No |
|---|---|---|
| a. Position-light flasher mechanism | | |
| b. First-aid—emergency equipment | | |
| c. Industrial and advertising installations | | |
| d. Pyrotechnics installation | | |
| e. Water-injection systems | | |
| f. Oil-dilution system | | |

This form is authorized by the CAA. The inspection recorded herein was conducted in accordance with the Civil Air Regulations.

| 12. SIGNATURE(S) | CERTIFICATE NO.(S) AND RATING(S) | DATE |
|---|---|---|
| | | |

FIGURE 1.



U. S. GOVERNMENT PRINTING OFFICE: 1955